

**Notice of Allowability**

Application No.

10/663,782

Examiner

Hai C. Pham

Applicant(s)

YOKOYAMA, MASATO

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Amendment filed 10/27/06.
2. ☒ The allowed claim(s) is/are 1-4,6-8,11-15 and 17-23.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☒ All    b) ☐ Some\*    c) ☐ None    of the:
    1. ☒ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
  - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),  
Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

### REASONS FOR ALLOWANCE

1. The following is an examiner's statement of reasons for allowance: Claims 1, 6-8, 11-12, 20-21 and 23 are allowed at least for the reason that the prior art of record does not teach or reasonably suggest the optical scanner for an image forming apparatus comprising a light source emitting a light beam, at least one final-stage reflection mirror having a reflection surface, which reflects a reflected light beam from a polygon mirror directly to the scanned surface of the image support, the reflection mirror surface having a first axis parallel to a main-scanning, and a second axis perpendicular to the first axis, an optical element adjusting a position of a scanning line in a sub-scanning direction, the optical element having a beam-incidence surface, a third axis parallel to the main-scanning direction on the beam-incidence surface, and a fourth axis perpendicular to the third axis and along a beam-incidence direction, a first adjustment unit provided to rotate said at least one final-stage reflection mirror around the second axis in order to attain uniformity of a scanning speed of the optical scanner in the main scanning direction, a second adjustment unit provided to rotate said optical element around the fourth axis in order to correct an inclination of the scanning line in the sub-scanning direction to a desired position of the scanning line, at least one of the first adjustment unit and the second adjustment unit being provided with an electrically driven actuator, a detection unit detecting an error of the scanning speed of the optical scanner, and a control unit controlling driving of the actuator based on the scanning speed error detected by the detection unit, wherein said at least one final-stage reflection mirror is a half mirror, and the detection unit detects the error of the scanning speed based on a

difference of detection times of the light beam detected by a plurality of photodetectors, said plurality of photodetectors being arranged on a back surface of the half mirror apart from one another at a given interval, as set forth in the claimed combination.

Claims 13, 15 and 17-19 are allowed at least for the reason that the prior art of record does not teach or reasonably suggest the optical-path adjustment method for the optical scanner having the configuration as discussed above, and wherein rotating the optical element is performed after rotating the final-stage reflection mirror.

Claims 2-4 and 22 are allowed at least for the reason that the prior art of record does not teach or reasonably suggest an optical scanner for an image forming apparatus comprising a light source emitting a light beam, at least one final-stage reflection mirror having a reflection surface, which reflects a reflected light beam from a polygon mirror directly to the scanned surface of the image support, an optical element adjusting a position of a scanning line in a sub-scanning direction, the optical element having a beam-incidence surface, a first axis parallel to the main-scanning direction on the beam-incidence surface, and a second axis perpendicular to the first axis and along a beam-incidence direction, a first supporting unit supporting a portion of said at least one final-stage reflection mirror, a first adjustment unit provided to rotate said at least one final-stage reflection mirror about the first supporting unit in a direction perpendicular to the reflection surface and change a distance between the reflection surface and the image support surface in order to attain uniformity of a scanning speed of the optical scanner in the main scanning direction, a second supporting unit supporting a portion of said optical element, a second adjustment unit provided to rotate

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said optical element about the second supporting unit in the sub-scanning direction in order to correct an inclination of the scanning line in the sub-scanning direction to a desired position of the scanning line, at least one of the first adjustment unit and the second adjustment unit being provided with an electrically driven actuator, a detection unit detecting an error of the scanning speed of the optical scanner, and a control unit controlling driving of the actuator based on the scanning speed error detected by the detection unit, wherein said at least one final-stage reflection mirror is a half mirror, and the detection unit detects the error of the scanning speed based on a difference of detection times of the light beam detected by a plurality of photodetectors, said plurality of photodetectors being arranged on a back surface of the half mirror apart from one another at a given interval, as set forth in the claimed combination.

Claim 14 is allowed at least for the reason that the prior art of record does not teach or reasonably suggest the optical-path adjustment method for the optical scanner having the configuration as discussed in the preceding paragraph, and wherein rotating the optical element is performed after rotating the final-stage reflection mirror.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

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2. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai C. Pham whose telephone number is (571) 272-2260. The examiner can normally be reached on M-F 8:30AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



HAI PHAM  
PRIMARY EXAMINER

January 4, 2007